

SUPPLEMENT C: PREPAREDNESS IN HEALTHCARE FACILITIES

NC Department of Health and Human Services, Division of Public Health

I. Introduction

Transmission of SARS-CoV in healthcare facilities was a major factor in the spread of SARS-CoV during the 2003 global epidemic. In areas of extensive outbreaks, the virus spread most readily among hospital workers caring for SARS patients, other patients, and visitors. Factors that most likely contribute to the disproportionate rate of transmission in healthcare settings include: 1) a higher virus titer in respiratory secretions during the second week of illness when patients are likely to be hospitalized, 2) use of ventilators, nebulizers, endotracheal intubation, and other droplet- and aerosol-generating devices and procedures, and 3) frequent exposures of workers to patients, their secretions, and potentially contaminated environments.

The large number of healthcare personnel who contracted SARS demonstrates the importance of early detection and infection control in limiting the spread of disease. In every region in which major outbreaks were reported, a substantial proportion of cases resulted from delays in clinical recognition and isolation of patients. SARS-CoV was also transmitted by infected visitors and by hospitalized patients with other medical conditions that masked the symptoms of SARS. Case recognition and implementation of appropriate precautions greatly reduced the risks of SARS-CoV transmission. However, even with appropriate precautions, there were isolated reports of transmission to healthcare workers in the settings of aerosol-generating procedures and lapses in infection control technique. Experience indicates that early detection and isolation of cases, strict adherence to infection control precautions, and aggressive contact tracing and monitoring can minimize the impact of a SARS outbreak.

II. Surveillance and Triage

A. In the absence of global SARS activity, consider screening all patients hospitalized with pneumonia for the following three characteristics that might indicate a higher index of suspicion for SARS-CoV infection:

1. In the 10 days before illness onset, travel to or close contact with other ill persons who recently traveled to a previously affected SARS area, or
2. Employment as a healthcare worker, or
3. Close contact with person(s) recently found to have radiographic evidence of pneumonia without an alternative diagnosis

B. In the presence of global SARS activity, signs (in appropriate languages) (Appendix C-1, C-2) will be placed outside the Emergency Department (ED)/outpatient facilities requesting that persons with symptoms of SARS and epidemiological exposure identify themselves to the [-----] (e.g., police, triage nurse).

1. A mask should be placed on the patient prior to them entering the ED.
2. Persons accompanying the patient for evaluation should be screened for symptoms of SARS ideally prior to entering the facility.
3. Posted visual alerts will recommend "respiratory hygiene" precautions.

C. In the presence of SARS activity in North Carolina (but no cases at this facility), patients with suspect or probable SARS requiring medical evaluation should be seen in the following designated area [-----] (i.e., the Infectious Disease Clinic) If possible, the designated area should be notified prior to the patient's arrival. The patient will be requested to wear a surgical mask. Persons accompanying the patient for evaluation should be screened for symptoms of SARS ideally prior to entering the facility.

1. Clinicians and intake and triage staff will be regularly updated on the status of SARS locally, nationally, and internationally (i.e., via email, memoranda, or meetings).
2. Intake and triage staff will be trained on how to assess risks for SARS and use any applicable tools (thermometers, signs/symptoms of SARS) to screen patients. The SARS coordinator or designee will develop a strategy to assign responsibility.

D. In the presence of SARS activity in North Carolina and cases at this facility

Screening

Screening of patients entering the facility will escalate from passive (e.g., signs at the entrance) to active (e.g., direct questioning, respiratory symptoms, temperature monitoring).

Screening will need to be coordinated with access controls, a triage station outside the facility to screen patients before they enter the facility, priority triage of persons with respiratory symptoms, and/or telephone screening of patients with appointments (Appendix C-3).

1. Institute a strategy to monitor the health of staff and patients who are potentially exposed to SARS.
2. For admitted patients, a risk assessment form should be placed in a prominent place on the patient's medical record (Appendix C-4)
3. In the presence of SARS activity in North Carolina and cases at this facility, all persons entering the facility will be screened. A "SARS Evaluation Center" will be used to separate SARS patients from other patients seeking care at [-----] (i.e., UNC Health Care System). When there is a presence of SARS activity in North Carolina, the [-----] (i.e., ID Clinic) will be used as the "SARS Evaluation Center". To prevent exposure of staff, patients and visitors, the [-----] (i.e., outside entrance/emergency exit) will be used.
4. When the number of potential SARS cases exceeds [-----] (i.e., 100) persons per day, the [-----] (i.e., Ambulatory Care Center) will be used as the "SARS Evaluation Center". Before the facility is used, determine needed ventilation, water supply, traffic routes, and modes of transport for patients who must be taken from the evaluation center to the healthcare facility.
5. Clinicians will contact the following department(s) [-----] (i.e., hospital epidemiology/infection control) and individual(s).
6. [-----] (i.e., ID/IC/supervisor on call) to report a potential SARS patient to hospital and public health officials.
7. Infection Control will be contacted at [-----] immediately when there is an evaluation or admission of a suspected or known SARS patient. Infection Control will contact the local health department. The local health department number is [-----].

If the local health department cannot be reached, contact the
NC General Communicable Disease Control Branch at 919-733-3419 (24/7 via pager).

III. Clinical Evaluation of Patients

Consideration of SARS as a potential diagnosis will vary by likelihood and level of risk of exposure. Potential sources of exposure will vary by status of SARS locally, nationally, and globally. Potential SARS patients need to be evaluated and managed in a way that protects healthcare workers, other patients and visitors.

Early clinical recognition of SARS relies on a combination of clinical and epidemiologic features. Although exposure history is a main factor in the diagnosis, many SARS patients share suggestive clinical characteristics.

A. Suggestive Clinical Characteristics

Suggestive clinical characteristics include: presence of fever and other systemic symptoms 2 to 7 days before onset of a dry cough and dyspnea, presence of radiographic evidence of pneumonia in most patients by day 7 to 10 of illness, infrequent presence of upper respiratory tract symptoms, and lymphopenia.

1. The definitions for SARS report under investigation (RUI) and disease are attached (Appendix C-5 or see CDC web page at <http://www.cdc.gov/ncidod/sars/> for up-to-date case definitions)
 - a. Clues to SARS
 - 1) Epidemiological exposure
 - 2) Constitutional symptoms suggestive of a viral disease: fever, myalgias, nausea, vomiting, sore throat, runny nose
 - 3) Respiratory symptoms suggestive of a viral disease: non-productive cough, shortness of breath
 - 4) Chest radiograph showing unilateral or bilateral patchy infiltrates
 - 5) Laboratory findings of leukopenia, lymphopenia, thrombocytopenia, hyponatremia, mildly elevated liver transaminases, hypoxia, PCR positive for SARS.
 - b. An acute febrile syndrome with or without “atypical” pneumonia is a common presentation with multiple etiologies, but without the proper exposure history, SARS need not be entertained as a possible etiology.
2. Clinical management
 - a. Treat as community-acquired pneumonia with regard to antibiotic and supportive therapy
 - b. Consider rapid testing for influenza A and B, and Respiratory Syncytial Virus (RSV); pneumococcal and legionella antigen testing (if positive, SARS unlikely)
3. Laboratory specimens for SARS (see Suppl. F)
Must have approval for testing from NC General Communicable Disease Control Branch
919-733-3419 (24/7)
 - a. Must have state identifier number on each specimen sent to NCSLPH
 - b. Consent for SARS testing is required by NCSLPH

B. Absence of known SARS activity worldwide

Perform a routine evaluation of respiratory illnesses and maintain a low index of suspicion for SARS. In the absence of SARS-CoV transmission anywhere in the world, the overall likelihood that a given patient with fever and respiratory illness has SARS will be exceedingly low unless there are both typical clinical findings and some accompanying epidemiologic evidence that raises the suspicion of exposure to SARS-CoV.

1. For all patients with febrile and/or respiratory illnesses, a routine diagnostic and therapeutic workup should be performed.
2. For patients with radiographic confirmed pneumonia that is severe enough to require hospitalization, the procedures described in Appendix C-6 will be followed.
3. In the setting of no transmission in the world, evaluation and management for possible SARS should be considered only for adults, unless special circumstances deem a child to be of potentially higher risk.

C. Once SARS activity has been documented anywhere in the world

The positive predictive value of even early clinical symptoms (e.g., fever or respiratory symptoms in the absence of pneumonia), while still low, may be more acceptable if used in combination with an epidemiologic link to a setting in which SARS has been documented.

1. Question all patients with fever or respiratory symptoms about recent close contact with persons suspected to have SARS and about exposure to locations in which recent SARS-CoV transmission is documented or suspected to have occurred if recommended by CDC and/or state health department. Persons with such exposure history should be evaluated for SARS-CoV infection as described in Appendix C-7.
2. The algorithm established for adults can be used in children with the following caveats:
3. The timing and rate of development of radiographic confirmed pneumonia are unknown
4. The positive predictive value of rapid virus antigen detection tests (e.g., RSV) “in season” will be higher in a pediatric population
5. Pneumococcal and legionella urinary antigen testing are not recommended for routine diagnostic use in children.

6. Typical symptoms of SARS may not always be present in the elderly patient and those with underlying chronic illness, such as renal failure. Therefore, the diagnosis should be considered for almost any change in health status, even in the absence of typical clinical features of SARS, when such patients have strong epidemiologic risk factors for SARS.
7. Use Droplet Precautions when caring for any patient with both fever and respiratory symptoms.

D. In the midst of a community outbreak in which transmission is occurring in well-established settings with all cases linked to other cases

Continue the activities in Appendix C-7. In addition, consider a diagnosis of SARS in all persons with radiographic evidence of pneumonia (even if not hospitalized) if they:

1. Have close contact with documented pneumonia, or
2. Have had exposure to hospitals or outpatient clinics in the 10 days prior to symptom onset (includes healthcare workers and non-healthcare workers).

IV. Infection Control and Respiratory Hygiene/Cough Etiquette

SARS provides a reminder of the risks of nosocomial transmission of respiratory pathogens and an opportunity to improve overall infection control in healthcare facilities. Staff should be reminded about the importance of strict adherence to and proper use of standard infection control, especially hand hygiene and isolation. A monitor (healthcare worker or infection control practitioner) will be stationed outside the patient care unit to observe and support staff providing direct patient care using special airborne and contact precautions.

A. All patients under evaluation for SARS will be placed on Special Airborne/Contact Precautions (Appendix C-8)

1. Contact Precautions consist of gloves and gowns – should be put on prior to entering room.
2. Airborne Precautions consist of placing patient in a room that meets airborne isolation requirements (private room, negative pressure, air exhausted directly to the outside, ≥ 6 air exchanges per hour).
3. Personnel should wear an N95 respirator (prior fit test clearance and instructions on respirator use) and eye protection (goggles or face shield) when entering the room.
4. Special Airborne/Contact Precautions (including eye protection) should be used for performing all procedures that generate aerosols (e.g., sputum induction, airway suctioning, aerosol medication therapy, bronchoscopy, intubation).
 - a) Limit the use of aerosol-generating procedures on SARS patients to those that are deemed medically necessary.
 - b) Use clinically appropriate sedation during intubation and bronchoscopy to minimize resistance and coughing during the procedure.
 - c) Use bacterial/viral filters on exhalation valves of mechanical ventilators
 - d) Eye protection should consist of goggles that fit snugly around the eyes
 - e) A face shield may be worn over goggles to protect exposed areas of the face but should not be used as a primary form of eye protection for these procedures.
5. Laboratory specimens will be hand carried to the laboratory. Use of the tube system is prohibited (see Suppl. F for lab specimen collection guidelines). In preparation for specimen collection and entering/exiting the room:
 - a. To collect specimen:
 - i. Place biohazard bag outside of door
 - ii. Bring additional biohazard bag into room
 - iii. Place specimen container in bag
 - iv. Place specimen (once collected) inside of biohazard bag
 - b. To exit room with specimen:
 - i. Prepare to exit room as in Appendix C-9
 - ii. Place clean glove on one hand
 - iii. Retrieve biohazard bag with gloved hand
 - iv. Use clean, non-gloved hand to open door
 - v. Place biohazard bag with specimen into biohazard bag outside of room

- vi. Remove glove
 - vii. Perform hand hygiene
 - viii. Complete procedures for removing PPE as in Appendix C-9
6. Postmortem care and autopsy procedures require adherence to specific guidelines (see CDC website at <http://www.cdc.gov/ncidod/sars/guidance/1/pdf/laboratory.pdf>).
 - a. Protective garments:
 - i. Surgical scrub suit
 - ii. Surgical cap
 - iii. Impervious gown or apron with full sleeve coverage
 - iv. Eye protection (e.g., goggles or face shield)
 - v. Shoe covers
 - vi. Double surgical gloves with an interposed layer of cut-proof synthetic mesh gloves
 - b. Respiratory protection: N-95 (or higher) respirator; OR powered air-purifying respirators (PAPR) equipped with a high efficiency particulate air (HEPA) filter. PAPR is recommended for any procedures that result in mechanical generation of aerosols.
 7. NC Communicable Disease Rules address "Handling and Transportation of Bodies" (see 10A NCAC 41A.0212)
 - a. Duty of the attending physician to provide written notification to all individuals handling the body of the proper precautions to prevent infection.
 - b. Body to be enclosed in a strong, tightly sealed outer case as soon as possible after death. This case shall not be reopened except with the consent of the local health director.
 - c. No open casket is permitted. The state epidemiologist may recommend other infection control measures.
 8. Infection control training and education will be provided for all hospital personnel and visitors who may be affected by SARS.
 9. Posters and instructional materials will be used to
 - a. teach appropriate hand hygiene and standard precautions
 - b. teach the correct sequence and methods for donning and removing personal protective equipment
 - c. instruct on actions to take after an exposure
 - d. instruct visitors and patients with symptoms and SARS risk factors to report to a specified screening and evaluation site.

B. Standard Precautions

Emphasize Standard Precautions to healthcare workers, visitors and patients the importance of respiratory hygiene/cough etiquette to help decrease transmission of SARS-CoV and other respiratory pathogens.

1. Surgical masks will be provided to all patients with symptoms of a respiratory illness. Instructions will be provided on the proper use and disposal of mask.
2. For patients who cannot wear a surgical mask, tissues and instructions will be provided on when to use them (i.e., when coughing, sneezing, or controlling nasal secretions), how and where to dispose of them, and the importance of hand hygiene after handling this material.
3. Hand hygiene materials will be provided in waiting room areas, and encourage patients with respiratory symptoms to perform hand hygiene.
4. An area in the waiting room will be designated where patients with respiratory symptoms can be segregated (ideally by at least 3 feet) from other patients who do not have respiratory symptoms.
5. Patients with respiratory symptoms will be placed in a private room (preferred) or cubicle as soon as possible for further evaluation.
6. Use of surgical or procedure masks by healthcare personnel will be implemented during the evaluation of patients with respiratory symptoms.
7. Installation of plexiglass barriers will be considered at the point of triage or registration to protect healthcare personnel from contact with respiratory droplets.
8. If no barriers are present, registration and triage staff will be instructed to remain at least 3 feet from unmasked patients and to consider wearing surgical masks during respiratory infection season.
9. Droplet Precautions will continue to be used to manage patients with respiratory symptoms until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond Standard Precautions.

C. Criteria for Escalating Infection Control Measures

SARS transmission risk in healthcare facilities (including hospitals, long-term care, and outpatient facilities) depends on the extent of SARS activity in the community but also SARS activity in the facility. The SARS response for escalating infection control measures will be based on SARS activity and transmission risks.

V. Patient Placement, Isolation, and Cohorting

Appropriate patient placement is a significant component of effective SARS control. Prompt separation from other patients and implementation of appropriate isolation precautions is imperative.

A. Patient Placement

All patients with suspected SARS seen in the [-----] (i.e., ED, ID clinic) should immediately be placed in a private room. If available a room meeting Airborne Isolation requirements (i.e., >6 air exchanges per hour, air exhausted directly to the outside, negative pressure) should be used.

1. A surgical mask should be placed on the patient until placement in an Airborne Infection Isolation Room (AIIR).
2. Contact and Special Airborne Precautions (plus face shield or goggles) should be immediately instituted.

B. Patient Admission Criteria

Patients with SARS report under investigation or disease should be admitted only if medically indicated (i.e., require hospital care for respiratory distress).

C. Hospitalized Room Criteria

Patients requiring hospitalization should be admitted to a room meeting airborne criteria. AIIRs are available on multiple wards [-----] (e.g., general medical unit has 17 AIIRs) and the following intensive care unit(s) [-----] (e.g., Medical Intensive Care Unit (MICU) and Pediatric Intensive Care Unit (PICU)).

The AIIRs in the [-----] (e.g., PICU) are [-----].

The AIIRs in the [-----] (e.g., MICU) are [-----].

The AIIRs in [-----] (e.g., general medical unit) are [-----].

1. Preference will be given to housing patients on [-----] (e.g. general medical unit). Ideally, the room at the end of the hallway should be used and a plastic barrier constructed across the corridor to create an “anteroom.” The exit door at the end of the corridor will be rendered unable to be opened from the stairwell (if possible). If [-----] (e.g., general medical unit) is full then the AIIRs in [-----] (e.g., 3 Anderson) will be used.
2. Patients requiring ICU care will be housed in the [-----] (e.g., MICU).
3. The number of staff allowed to enter the room should be minimized to only essential personnel. Students should be prohibited from participating in the care of patients with suspect or probable SARS.
4. During codes or incidents of cardiac/respiratory arrest, healthcare workers will follow stringent precautions (Appendix C-10).

D. Cohorting Patients

1. A lack of Airborne Infection Isolation Rooms (AIIRs) and/or a need to concentrate infection control efforts and resources may lead to strategy of cohorting patients in individual rooms on the same floor, rather than placing them in AIIRs throughout the hospital.
2. Based on the number of AIIR rooms available, determine at what point a special SARS unit will be opened.
 - a. The total number of AIIRs is [-----].
 - b. A special SARS unit will be opened when [-----] number of the AIIRs are filled.

3. Even while cohorting SARS patients on the same floor (or on a designated SARS unit), AIIRs are preferred for:
 - a. Patients who are known to have transmitted SARS-CoV to other persons.
 - b. Patients in whom the risk of SARS is being assessed (to avoid placing non-SARS-CoV-infected patients on a SARS unit).
4. In the context of significant SARS-CoV transmission, high patient volume or frequent unprotected exposures, patients might be divided into the following cohorts:
 - a. patients who are exposed and asymptomatic
 - b. patients who are exposed and symptomatic but do not meet the SARS case definition;
 - c. patients who meet the SARS case definition; non-exposed patients.

E. Contact Log

Maintain a log of all persons entering the room of patients with suspect or probable SARS.

F. Transportation of Hospitalized SARS patients

Whenever possible, hospitalized SARS patients should have procedures/tests done in their own rooms, rather than transporting to other areas (Appendix C-11). If patients must be transported, adhere to the following:

1. Patient must wear a surgical mask while being transported.
2. Transporters should wear N95 respirator, gloves, gowns, and eye protection.
3. Always notify recipient area prior to patient transport.
4. Ventilators used for patient transport must use bacterial/viral filters on the exhalation valves.
5. Identify a path segregated from the main traffic routes as much as possible:
 - a. Dedicated SARS pathways will be determined by the SARS coordinator or designee.
 - b. The following elevators will be utilized: [-----].
 - c. The following corridors will be utilized: [-----].

G. Visitors

Visitors will be excluded from visiting persons with suspect or probable SARS.

1. A quarantine order will be sought from [-----] the health director of [-----] (the local health department) **OR** the state health director to enforce this policy.
2. The only exception will be the guardians of minor children and no more than 2 significant others (e.g., spouse, sibling), who may visit provided that they do not have fever or respiratory symptoms. An exception to the visitation rule can be made by the Director of Infection Control/ Hospital Epidemiology in consultation with state or local public health authorities.
3. Visitors will receive infection control training via [-----] (e.g., brochures, video) and comply with infection control measures. To allow for PPE-free time, the maximum time per visit is two hours.
4. Symptomatic persons exposed to SARS patients and symptomatic will be excluded from visitation.

VI. Engineering and Environmental Controls

A. CDC Environmental Guidelines

The preferences for housing critical and non-critical patients are listed above. Ensure that the AIIRs are functioning properly via Plant Engineering and in accordance with the CDC Environmental Guidelines (see <http://www.cdc.gov/ncidod/hip/enviro/guide.htm>).

1. Determine the current capacity for isolating SARS patients in ICU and non-ICU settings (see Section V-C).
2. If all AIIRs are utilized, identify non-AIIR rooms for SARS care to be modified to achieve appropriate airflow direction and/or air exchanges. Preference for AIIRs will be: patients who meet the SARS case definition and then patients who are exposed and symptomatic but do not meet the SARS case definition.

3. Determine the best location in the hospital for a SARS unit in which patients and the staff caring for them could be cohorted. This location will be [-----] (e.g., general medical unit). The following engineering requirements must be met for the SARS unit:
4. An air handling system that will allow the unit to be made negative pressure to surrounding areas and allow for a pressure gradient with air flow from the 'cleanest' (i.e., nurses station) to the 'least clean' (i.e., patient room) area.
5. Rooms may be converted to negative pressure in relation to the hallway.
6. The SARS Evaluation Center, mentioned above, separates potential SARS patients from other patients seeking care at the healthcare facility.
7. Determine necessary ventilation, restroom facilities, water supply, etc.
8. Determine appropriate traffic patterns for transporting patients from the evaluation center to the healthcare facility (see Section V-F).

B. Environmental/Housekeeping

Designate an environmental/housekeeping specialist to verify that cleaning and disinfection methods and staff is appropriately prepared to provide environmental services to SARS patient care areas. The designated specialist will be [-----]. Environmental disinfection policies should be followed:

1. Following discharge, hospital room housing SARS patients should receive terminal cleaning and disinfection using the Environmental Service policy. Environmental service personnel should wear gloves, gowns, N95 respirator and eye protection (i.e., goggles or face shield).
2. In clinics and procedure areas (e.g., Radiology), all equipment (e.g., stretchers) having direct or close contact with patients with suspected SARS should be disinfected immediately after use with an EPA approved disinfectant-detergent (e.g., Vesphene or 1:10 dilution of bleach and water).

VII. Exposure Reporting and Evaluation

Unrecognized SARS patients may serve as a significant source of transmission. Rapid reporting and evaluation of persons exposed to SARS will be an important measure in early identification and isolation.

A. Exposure Reporting Processes

Establish exposure reporting processes that includes various methods for identifying exposed personnel such as self-reporting by employees, observation of non-compliance with PPE, and logs of personnel entering SARS patient rooms.

1. Employees will self-report to [-----] (i.e., supervisor).
2. Observance of non-compliance will be reported to [-----] (i.e., supervisor).
3. Logs will be maintained of all persons entering SARS patient rooms.
4. These logs will be provided to [-----] (i.e., supervisor).
5. Exposure consists of providing care in the same room of a SARS patient or being in the same room of a person with suspected SARS without proper PPE (personal protective equipment).

B. Management of Healthcare Workers with Unprotected Exposure to a SARS patient (without symptoms but high-risk exposure)

The procedure for managing an unprotected high-risk exposure (i.e., worker in the same room as probable SARS patient during a high-risk aerosol-generating procedure and infection control precautions are either absent or breached) but has no symptoms of SARS, the worker:

1. Should be excluded from duty (e.g., administrative leave) for 10 days following the date of the last high-risk exposure
2. Need not limit activities outside the health care setting but should be vigilant for development of fever and/or respiratory symptoms
3. Should undergo and document active surveillance for the development of respiratory symptoms
4. Should be placed under a quarantine order by the local health director

C. Management of Healthcare Workers with Unprotected Exposure to a SARS patient (without symptoms and not high-risk exposure):

The procedure for managing an unprotected low-risk exposure (i.e., working in the same room as probable SARS patient and the worker is not wearing the appropriate PPE or realized that he/she has self-contaminated by touching one's face either while providing care or while removing PPE), but has no symptoms of SARS, the worker:

1. Need not be excluded from duty because of the exposure.
2. Need not limit activities outside of the healthcare setting.
3. Should be vigilant for development of fever and/or respiratory symptoms.
4. Should undergo and document/record active surveillance for the development of respiratory symptoms.

D. Management of Healthcare Workers Exposed to SARS (with symptoms):

Exposed healthcare workers who develop fever and/or respiratory tract symptoms should not report to work. They should immediately report by phone the development of fever and/or respiratory tract symptoms to infection control at [-----], employee health at [-----], or designee [-----] at [-----]. The healthcare worker should report to the [-----] (i.e., Infectious Disease Clinic) for clinical evaluation as medically necessary. Symptomatic health care workers should be evaluated in AIIRs or portable HEPA units could be used in other predetermined locations.

1. If symptoms do not progress to meet the suspect SARS definition within 72 hours after first symptom onset, the person may be allowed to return to work, school, out-of-home child-care, church or other public areas, and infection control precautions can be discontinued.
2. Healthcare workers who meet or progress to meet the SARS case definition should continue infection control precautions for 10 days after resolution of fever, provided respiratory symptoms are absent or improving.
3. If the illness does not progress to meet the case definition but the worker has persistent fever or unresolving respiratory symptoms, infection control precautions should be continued for an additional 72 hours, at the end of which a clinical evaluation should be performed. Return to work can be considered in consultation with infection control and employee health staff.

E. Waiting Rooms

Outpatient facilities should develop a mechanism to identify patients that shared a room (e.g., waiting room) with a person with suspected SARS. Logs of patient names and check-in time will be maintained.

F. Healthcare Worker Monitoring

Healthcare facilities should maintain a log of all healthcare workers monitored for unprotected exposure to a SARS patient. The log should be communicated to local and state public health authorities (Appendix B-1)

VIII. Staffing Needs and Personnel Policies

During a SARS outbreak of any size, existing staffing shortages may be amplified by illness among staff members, fear and concern about SARS, and isolation and quarantine of exposed staff or ill/exposed family members. Staffing shortages are likely to escalate as an outbreak progresses. The strain involved in SARS patient care and prolonged use of personal respiratory protection may intensify staffing challenges.

A. Staffing

All healthcare workers are expected to provide care for patients with known or suspected SARS, as well as comply with all infection control and public health recommendations.

1. Determine how staffing needs will be met as the number of SARS patients' increases and/or staff become ill or are quarantined. The staffing needs for SARS patient management may be greater (e.g., twice the normal staffing ratio) than that normally provided for other non-ICU and ICU patients to allow PPE-free time.

Example: The minimum number of staff and ancillary staff necessary to care for a single patient or group of patients on any given day is [-----] (i.e., 2 nurses and 1 assistant for 8 patients).

Example: The minimum staffing requirements for providing care for one SARS patient will be [-----].

2. Use of alternative staffing resources (e.g., retired healthcare workers, volunteers, contract workers, students, residents) may be needed but will require training and support during the outbreak response. These staff members will be trained in infection control practices by the ICPs or their designee [-----] and will be fit-tested for respirators in multiple manufacturer models by Occupational Health Services.
 1. Contract agencies are [-----] and may be reached at [-----].
3. During a SARS outbreak of any size, all infection control professionals will be needed to formally monitor and reinforce compliance with PPE measures and policies. ICPs will not only implement appropriate infection control measures but also stop practices that are ineffective. Staff members will be designated to assist ICPs during outbreaks (e.g., sitters will be placed outside the patient rooms to assist with proper use of PPE and maintain the entry log).

B. Personnel Policies

1. Develop criteria for healthcare worker furloughs and work restrictions (see Section VII).
2. Develop systems for follow-up of healthcare personnel after unprotected exposures to SARS patients (see above). Ensure coverage is inclusive of students, contract, and hospital employees.
 1. Students: Student Health [phone number and location]
 2. Hospital employees: Occupational Health Services [phone number and location]
 3. University employees: University Occupational Health [phone number and location]
 4. Contract employees: Emergency Department or designee [phone number and location]
3. If a healthcare worker provides care at more than one facility, the healthcare worker will be instructed to notify [-----] (e.g., supervisor) if one of the facilities is providing care to SARS patients. If quarantine is used as an exposure management tool, some healthcare workers may be placed on 'home/work restrictions' to ensure sufficient staffing levels. Healthcare workers on home/work restrictions should travel only between home and the healthcare facility for the duration of the restriction.
4. Health care workers should have access to mental health professionals to help them cope with the emotional strain of managing a SARS outbreak (e.g., Employee Assistance Program, Critical Incident Stress Management, and Psychiatry).

IX. Hospital Access Controls

When SARS is present in the community, preventing unrecognized SARS patients from entering the facility will be essential. Restricting access to the facility will assist in the implementation of effective surveillance and screening. Consider limiting hospital visitors and involve police services to enforce access limitations in the event when there are a few cases of SARS in the facility but NO nosocomial transmission. Consider limiting hospital admissions, transfers, and discharges (in accordance with local/state recommendations and regulations) in the event that nosocomial SARS-CoV transmission occurs. Establish criteria and protocols for closing the facility to new admissions and transfers in the event that nosocomial SARS-CoV transmission occurs (i.e., healthcare workers ill).

X. Supplies and Equipment

Both consumable (e.g., PPE) and durable (e.g., ventilators) supplies will be needed to care for patients. Not only will the strain of an outbreak deplete a facility's supply of resources, but it may also affect the ability to order replacement supplies.

Assess anticipated needs for consumable (hand hygiene supplies, N95s, goggles and face shields, gowns, gloves, surgical masks) and durable resources (ventilators, portable x-ray units, portable HEPA filtration units) that will be needed to provide care for various numbers of SARS patients.

If N95s are not available, alternatively use N95s from another vendor, followed by N100s, N99s, and surgical masks (PAPR for high-risk procedures). Central Distribution should stock a three-month surplus of consumable supplies.

XI. Communication and Reporting

A SARS outbreak will generate a need for rapid analysis of the status of patients and transmission in the healthcare facility and reporting of this information to employees, public health officials as well as to the public, the media, and political leaders.

A. Notification

Notification of suspected SARS cases will occur in the following manner:

- Infection Control at [-----]
- Local health department at [-----]
- State health department at [-----]
- Public Health Regional Surveillance Team (PHRST) at [-----]

B. Reporting

All reporting of SARS cases to the CDC will be on-line utilizing the CDC Secure Data Network (SDN), which may be currently accessed by NC State Epidemiologists at [-----] and the Public Health Regional Surveillance Teams at [-----].

C. Updates

A mechanism for regular contact (e.g., two times per day, daily) will be established for the health care staff to have a conference call with the state and local health department personnel to report and receive information on SARS activity in the healthcare facility and the community. Ensure that infection control staff and hospital administration are included.

Conference calls may also be utilized to discuss discharge planning of SARS patients with health department officials to ensure appropriate follow-up and case management in the community.

D. Public Relations

Determine the flow and release of information related to SARS patient care or transmission in the facility. The public relations staff should work with the SARS coordinator or designee to ensure the clarity and accuracy of information. The public relations staff may be reached at [-----]. Consider the establishment of a SARS hotline. Prepare plans for:

1. Internal communication with patients and healthcare personnel,
2. External communication with the media and the public (coordinated with local health officials),
3. Frequently asked questions and press releases.

E. Hospital Emergency Incident Command System (HEICS)

The HEICS will be activated when there are one or more cases of SARS in the hospital.

The Hospital Emergency Incident Command System (HEICS) is an emergency management system developed to assist medical facilities' operations during emergency situations. The HEICS is based on the Incident Command System (ICS) developed by the Fire Service as a disaster management tool for first responders (e.g., Fire, EMS, Law Enforcement). Some of the advantages of the HEICS include:

1. Consistent terminology among all responders
2. Definitive chain-of-command and communication lines
3. Manageable span of control (i.e., scope of supervision)

4. Flexible organizational structure that can easily expand and contract

HEICS utilizes an organizational chart which on a basic level includes an Incident Commander (IC) and four section chiefs (Operations, Planning, Logistics, and Finance/Administration); Appendix C- 12 displays an example of a fully-expanded organizational chart. Each position within the organizational chart has a specific job description to address during an emergency situation. These job descriptions are summarized in Job Action Sheets (JAS) designed to direct the assigned individual in disaster recovery tasks.

The Healthcare facility should notify local and state public health authorities when activating the Hospital Emergency Incident Command System (HEICS). The facility should provide the name and contact information for the person (Incident Commander) with authority to make decisions related to the SARS outbreak.

XII. Community Healthcare Delivery Issues

It is the responsibility of all healthcare workers to comply with this guideline.

No patient should be transferred based upon a diagnosis of SARS. Transfer will only occur if medically necessary.

REFERENCES

Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS). Centers for Disease Control. Atlanta, GA. Draft 10 October 2003.
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